

EXHIBIT 48

REDACTED

Truthful DRS Design Doc

[REDACTED]

Dynamic Revenue Sharing (DRS) was launched in 2015 and achieved great results in increasing publisher and Google revenue by dynamically changing the AdX sell-side revenue share to increase match rate. One known issue with the current DRS is that it makes the auction untruthful as we determine the AdX revshare after seeing buyers' bids and use winner's bid to price itself (first-pricing) when the bid is within the dynamic region. This could incentivize buyers to bid strategically instead of truthfully to achieve better ROI and has been the key concern preventing AdWords and DBM from using DRS.

We would like to adjust the adx revenue share on a per-query basis before collecting buyers' bids, disclose the adjusted pre-revshare reserve price to buyers in the bid requests fairly, and make the auction a clean second-price auction. We plan to achieve this by [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

The problem statement and proposed solution at a high level can be found at Make AdX Dynamic Revshare Truthful. This design doc will focus on the technical implementation of the first part of the solution - [REDACTED]. Truthful DRS Auction Walkthrough contains more in-depth description of the pricing, payout and debt recollection rules.

Eng: [REDACTED]

Training

Serving

Building Features

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Auction Simulation

Future Work

[REDACTED]

(b) (7)(C), (b) (7)(D)

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(b) (7)(C), (b) (7)(D)

[REDACTED]